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UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Engineering

M O N T H L Y N E W S L E T T E R

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In October S.H. McCrory inspected public works projects in progress at Stoneville and Starkville, Miss. and at Auburn, Ala.

The sum of $77,813 of Public Works funds has been allotted for buildings and equipment at Stoneville, Miss., Moorestown, N.J., and Arlington Experiment Farm. Also, $57,750 has been apportioned to the soil erosion experiment farms. About $4,000 of the above amounts has been spent to date. The plans and specifications are being prepared by the Division of Plans and Service.

A drainage survey and plans for a drainage system for a subsistence farm near Morgantown, West Virginia, were made by L. A. Jones and G.R.Shier. This farm is one of the Federal relief projects.

Civilian Conservation Corps camps for erosion control work began moving south about October 15, L. C. Tschudy reports. It is expected that all camps doing erosion-control work in the Dakotas, Minnesota and Wisconsin will move south or will transfer to other work by about December 1.

Great improvement in the quality of work being done by Texas camps is noted in W. D. Ellison's reports. Mr. Ellison has submitted pictures showing that camps are now constructing excellent rock check dams laid in mortar.

Inspection of proposed erosion-control camp sites in North and South Carolina has been completed by F.O.Bartel. He is now reorganizing erosion-control works being done by a few camps in these States in order to improve the quality of the work in progress.

On August 26 a rain of 2.56 inches occurred on the State Experiment Farm at Ardmore, Okla. and the highest intensity for a 5-minute interval was 7.44 inches per hour, according to H. E. Bergschneider. This is the highest intensity for a 5-minute interval that has been recorded on any of the soil-erosion experiment stations since their establishment. Valuable data for comparatively flat slopes on terraced and unterraced land as exists at Ardmore were obtained from this rain.

Some tests on the rod weeder and one-way plow, to determine the draft when conducting field operations parallel to and across terraces as compared with the draft for these machines when operating on unterraced land, were conducted by R. R. Drake and Professor Zink of Manhattan, Kans.

A rain varying from 3.3 to 4.5 inches on September 10 occurred on the Temple, Tex. farm as reported by H. O. Hill. This is the second large rain that has occurred on this project since the installation of most of the run-off and silt measuring apparatus. The first data of any value for the tile drains in the channel of the level terraces were obtained during this rain. The water above the terraces with tile drains disappeared in 2 days while above the terraces where no tile drains had been installed

the water remained for a period of 10 days. Also for this rain the advantage of running crop rows parallel to the terraces as compared with rows crossing the terraces was demonstrated on the experiment on the Chapman farm.

P. C. McGrew reports that the terraces on the Pullman, Wash. farm were lowered in height 2 to 5 inches during the summer by cultivation. It appears from this report that annual maintenance in addition to the annual farm operations will be required for terraces on such steep slopes as exist on the Pullman farm.

A model of a terraced field was constructed by G. E. Ryerson and exhibited at the local county fair at La Crosse, Wis. This afforded a good opportunity to familiarize the local farmer with the practice of terracing.

R. A. Norton reports a large number of visitors to inspect the erosion control work on the Clarinda Station. One group consisted of 31 vocational students from the Belford High School accompanied by their instructor and another group consisted of 30 farmers from Mills and Pottawattamie Counties accompanied by their county agents.

One of the largest rains since the station was established at Bethany, Mo. (4.57 inches) occurred on September 26. A. T. Holman reports that construction work on an experiment to determine the effect of tile above level terraces was completed just prior to this rain and data of a valuable nature were obtained for this rain. Where the tile extended the full length of the terrace the water was removed as fast as it fell; where the tile extended only about one-half of the terrace the water was removed in about 6 hours and where the tile only crossed the terraces at right angles the water was removed within a period of 24 hours.

Chas. A. Bennett spent the first week of October in Washington in conference with officials of the Bureau of Agricultural Engineering and Agricultural Adjustment Administration.

The Cotton Ginning Investigations displayed an interesting exhibit during the week of October 9 to 14, at the Mississippi State Fair, Jackson, Miss. This display consisted of the model ginnery that was on exhibition in Washington during the Washington Bicentennial last year and mounted cotton samples showing improvements effected by drying, as well as photographs of other samples of cotton, of experimental machinery, and of the laboratories at Stoneville.

The Assistant Secretary of Agriculture, Dr. Rexford G. Tugwell, visited the water-spreading project being carried on in southern California He was accompanied by W.W. McLaughlin, Dean C. Muckel, and several representatives of the Forest Service. Considerable development has taken place on the Santa Ana and Lytle Creek spreading grounds, including construction of a diversion weir on Lytle Creek and 125 miles of shallow ditch. Two Parshall flumes, one with a 15-foot crest and one with an 8-foot crest, were installed to measure the water spread, in addition to the 15-foot flume in use last year.

Winter-killing of alfalfa was investigated by M. R. Lewis on a trip through eastern Oregon and Washington, upon request of the Division of Western Irrigation Agriculture. County agents in the Yakima and Walla Walla valleys in Washington and in Umatilla and Morrow counties in Oregon, and forage crop specialists at Washington State College and the University of Idaho were consulted, as were also representatives of the Umatilla and Prosser field stations.

Tests on the vortex sand-trap have been continued by R.L.Parshall and Carl Rohwer at the Bellvue Laboratory, Colorado. Indications are that the action of the tube is more dependent on the velocity of the water in the flume than on the discharge through the tube. As the angle of the tube is increased, the percentage of sand caught decreases, but the tube becomes more effective in carrying out the sand that is caught.

Experiments to determine rate of penetration of irrigation water are being continued by R. A. Work at the Medford, Oregon, experiment station. The accumulated data show that a small amount of water will penetrate the tight clay to bedrock in a very short time, but that during warm weather at least, it is impossible to bring the horizons below one foot to field capacity. The study is of importance in connection with the irrigation of pear trees, which are grown very extensively in that region.

Possible relation between the existence of "leaf spot" on sugar beets and time and amount of irrigation water applied is being studied by Leslie Bowen at the Scottsbluff, Neb. station. The increasing prevalence of this condition of some experimental plots prompted the study.

Field work on investigations for the Farm Credit Administration in the Lower Rio Grande Valley, Texas, under the direction of Wells A. Hutchins and in Imperial and Coachella valleys, Calif., under the supervision of P. A. Ewing, was completed in September, and reports are now being prepared in the Berkeley office. Messrs. Scobey, Marr, and Faris are assisting in the Rio Grande investigation, and Messrs. Blaney and McCormick, also Prof. W. W. Weir of the University of California, in the Imperial Valley study.

As a part of the cooperative work at the Auburn, Ala. station upon the study of plow shapes and soil reactions, Professor M.L. Nichols and I. F. Reed have recently completed a motion picture film showing "How the Plow Works." This film shows a method of measuring plow-bottom shape, and the actions and reactions of six types of plow bottoms in four soil types varying from sand to Mississippi Delta buckshot. The plow bottoms used varied from the slow turn sod type to the short turn of the extreme stubble type and included one English-type bottom. In spite of these extreme ranges of plow shapes and soil characteristics the reactions were similar for all bottoms and in all soils.

A mimeographed report "Procedure for Making Draft Tests of Plows," prepared by Division of Mechanical Equipment in cooperation with the Ohio Agricultural Experiment Station, was released recently. This report also gives directions for making square-yard harvests of legumes, description of a proposed soil-sampling tube, and a drawing of a recommended furrow gage.

An allotment of about $110,000 of Public Works funds has been approved for a soils manipulation project at Auburn, Ala. The plans call for six or eight plots probably 20 x 250 feet in size supplied with moisture by spray irrigation. The first two feet of soil will be imported and will consist of soils representative of large areas of agricultural land. Various farm implements will be drawn through the plots and dynamometer records made of the draft required.

Tests made by W. M. Hurst and W. R. Humphries showed from 90 to 95 per cent of smut balls in seed wheat removed with farm-size fanning mills in one cleaning operation when properly adjusted. Then by running the wheat through the machine two or three times all smut balls were removed.

A public patent has recently been granted to Messrs. Schoenleber and Glaves for the invention of a trash guide attachment for plows. This device, which is attached to each bottom, consists of a piece of sheet iron so shaped and installed that practically complete coverage of trash, no matter how dense, can be effected with plows even as small as 12 inches.

G.A. Cumings who recently inspected the fertilizer placement work now in progress with snap beans in Florida, states that early growth is most rapid where the fertilizer was placed either in a band at each side of the row or at a depth of 3 inches directly under the seed. Germination and early growth are considerably retarded by placement of the fertilizer either 1 inch under the seed or on the surface of the ground over the row. The plats at Winter Garden were planted by A.L. Sharp about September 20. Additional plantings will be made on the Florida east coast about October 19, where there has been a large amount of damage to beans.

On an inspection trip in early October through the beet areas of northern Iowa, Minnesota, Indiana, and Ohio, E. M. Mervine observed the satisfactory performance of an entirely rebuilt beet harvester manufactured by the Scott Viner Company of Columbus, Ohio, which is much simpler than the machine tried last year.

V. D. Young has been transferred from the corn-borer station at Moorestown, N.J. to the soil-erosion experiment station at Statesville, North Carolina. Frank Irons has returned to Moorestown to continue the corn borer investigations in that area and aid in developing means of controlling the Japanese beetle.

R. M. Merrill spent a few days early in October inspecting work of the corn borer project at Urbana, Ill. and trying out special disc jointers and trash guides at Ames, Iowa which were developed at Toledo for corn borer control.

Thayer Cleaver gave a radio talk October 20, dealing with what constitutes good plowing, on a program given by the Illinois Agricultural Experiment Station.

The performance of the Urschel beet harvesting machine being tested at Van Wert, Ohio, by E. M. Mervine was observed by O. K. Hedden and R. M. Merrill.

Wallace Ashby visited the First Homestead unit at Dayton, Ohio, to investigate the use of rammed earth as a building material for subsistence farms. A satisfactory wall was built by the mixture of 20 parts of the natural soil, 10 of gravel and 1 of cement. While subsistence farms are small, averaging perhaps 3 acres in area, their building requirements have much in common with those of larger farms and agricultural engineering experience should be valuable to them.

The report on the measurements of pressures exerted by ear corn on the sides, bottom and cross bracing of an experimental corn crib 24 feet high has been completed by J. R. McCalmont.

The test work at Johns Hopkins University on vaporizing oil burners has been completed by A. H. Senner and reports on the several pieces of equipment have been transmitted to the manufacturers who cooperated in this work.

Mr. John Hogsbro, a young engineer of the Agricultural College of Kobenhavn, Denmark, visited this Bureau recently and discussed the ventilation of stables with M.A.R. Kelley. He expected to tour some of the mid-western States to inspect installations of ventilation systems on typical farms.